

I CLAIM:

¹⁶21. An optical waveguide structure comprising:
 an optical waveguide having a bend and being formed of a photosensitive material; and

a grating structure arranged to guide light of a predetermined wavelength around the bend in the waveguide, the grating structure comprising UV-induced refractive index variations in the waveguide.

¹⁹22. An optical waveguide structure as claimed in claim ¹⁸21, wherein the grating structure comprises a chirped grating.

²⁰23. An optical waveguide structure as claimed in claim ¹⁸21, wherein the grating structure comprises a sampled grating.

²¹24. An optical waveguide structure as claimed in claim ¹⁸21, wherein the grating structure is disposed to guide the light in a reflection mode.

²²25. An optical waveguide structure as claimed in claim ¹⁸21, wherein the grating structure is disposed to guide the light in a transmission mode.

²³26. An optical waveguide structure as claimed in claim ¹⁸21, wherein the bend comprises a bend at a branched section of the waveguide.

²⁴27. An optical waveguide structure as claimed in claim ¹⁸21, wherein the grating structure comprises a continuous grating.

²⁵28. An optical waveguide structure as claimed in claim ¹⁸21, wherein the grating structure comprises two gratings which mirror one another.

²⁶29. An optical waveguide structure as claimed in claim ¹⁸21, wherein the grating structure includes regions of constant reflective index which extend in a propagation direction of the waveguide.

²⁷30. An optical waveguide structure as claimed in claim ²⁶29, wherein the regions extend parallel to the propagation direction.

²⁸31. An optical waveguide structure as claimed in claim ²⁷30, wherein the regions extend cylindrically parallel to the propagation direction.

²⁹32. An optical waveguide structure as claimed in claim ²⁷30, wherein the regions extend ellipsoidally parallel to the propagation direction.

33. An optical waveguide structure as claimed in claim 21, wherein the device further comprises at least one optical reflector disposed in a direction transverse to a propagation direction of the waveguide to aid in guiding the light around the bend.

34. An optical waveguide structure as claimed in claim ~~21~~²⁹, wherein the device comprises two or more grating structures angularly disposed with respect to each other to guide the light around a plurality of bends in the waveguide.

35. An optical waveguide structure as claimed in claim 21, wherein each grating structure is formed by UV holography.

32. An optical waveguide structure as claimed in claim 21, wherein the waveguide structure is a sensor further comprising means for measuring an intensity of the light at a predetermined point along the waveguide for determining changes in intensity due to induced changes in confinement conditions of the sensor.

37. A method of adapting a photosensitive waveguide to guide light of a predetermined wavelength around a bend in the waveguide, comprising:

using UV light to induce refractive index variations in the waveguide such that at least one grating structure is formed, wherein the grating structure is disposed to guide the light around the bend.

add $\beta^2 \gamma$